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THE BIRDS OF KODIAK ISLAND, ALASKA

By HERBERT FRIEDMANN*

Kodiak Island, originally called Kaniag by its native inhabitants, was discovered by Glottsoff in 1763. He and his crew wintered in that region, leaving the island in May, 1764. Shelikoff occupied the island in the name of Russia in 1783 and left one of his men—Delareff—in charge; the Spaniard Gonzalo Haro touched upon its shores in 1788, but no notes on Kodiak natural history are to be found in the records of these earliest voyages. The first observations and collections of Kodiak fauna and flora date from 1789. It was during that year that a Russian ship was dispatched to the island by the Czar's government to investigate the stories of Russian atrocities perpetuated on the natives there. The vessel was commanded by an Englishman, Joseph Billings, who figures in the history of Kodiak ornithology by virtue of the fact that he took with him a naturalist, Dr. Carl Merck, to gather data, and specimens. Merck spent the winter of 1789-1790 and the following spring there as Billings did not sail away until July 31, 1790. Merck's material went to St. Petersburg where it was studied by the eminent naturalist Peter Simon Pallas, who on the basis of these specimens, gave us our first scientifically recorded items of Kodiak ornithology in his well-known work, the *Zoographia Rosso-Asiatica*, published in 1811. The earliest published references to Kodiak birds known to me are a few words in Martin Sauer's account of the Billings expedition, printed in 1802. We may quote Sauer's ornithological comments in their entirety. "... The birds that I observed hereabout were ... wild geese; different kinds of gulls; the crested and tufted auk; blue pettrel, of a rusty dark brown, very like the swallow; the foolish and black guillemot; divers, and a great variety of ducks; the flesh of which are eaten by the natives, the skins used for dresses, and the bills, particularly of the sea-parrot, employed for ornament. ..."

Davidow included some casual notes on Kodiak birds in his *Dvukratnoie Putieshestvie v Amerikie*, 1812, vol. 2, pp. 204-217, kindly called to my attention by Dr. A. Hrdlicka. Langsdorff's *Voyages and Travels in Various Parts of the World during the years 1803, 1804, 1805, 1806 and 1807*, vol. 2, 1814, pp. 63, 75, contains a few notes on

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the Kodiak avifauna. Langsdorff saw almost no land or singing birds, "... but marsh and water-fowl . . . in the greatest abundance. Swans, geese, ducks, cranes, herons, auks, guillemots, plovers, and many others, come in innumerable flocks, both in spring and autumn; and the magpye, which . . . is here as familiar as a sparrow."

The next work to deal in part with Kodiak birds was Brandt's undated *Icones Avium Rossicarum*, of which only the plates were published, the text having been suppressed although some impressions were distributed to ornithologists at the time. In 1873 Finsch supplied a systematic index to these plates. Brandt was on Kodiak Island himself in 1844.

Wosnessensky collected in Alaska for the Academy of Sciences of St. Petersburg during the years 1840 to 1849. He remained on Kodiak Island from the end of the summer of 1842 until the summer of the following year, and again spent some time there in 1849. His Kodiak material comprised some 143 specimens of 60 species of birds, a list of which has been kindly sent me by Dr. B. Stegmann. I have incorporated these records in the main body of this paper.

The Russo-American Telegraph Expedition stationed, among others, Ferdinand Bischoff on Kodiak Island in 1868. Bischoff was an active collector and amassed and sent to Professor Baird of the Smithsonian Institution 386 bird skins and 18 eggs collected in 1868 and 1869. This formed the earliest extensive collection of Kodiak birds. Dr. Thomas T. Minor, medical officer of the United States Cutter *Wayanda*, visited Kodiak during 1868 in connection with the telegraph company's work and collected a few (4) birds which, in due time, also came to the Smithsonian Institution.

After the establishment of American government in Alaska, a number of weather and meteorological observers were stationed on Kodiak Island. Tarlton H. Bean was there in 1880; William J. Fisher in 1882 and 1883; both collected numbers of birds and eggs, which they sent to the United States National Museum. Dr. Panshin, concerning whom I have been unable to learn a thing, gathered together some 33 birds from the island in 1871; Bernard J. Bretherton collected a little during 1893 and 1894 (13 birds, 8 eggs) for the United States National Museum and also some birds for the Oregon State Agricultural College. Bretherton published an account of his observations on Kodiak birds in the *Oregon Naturalist*, iii. 1896, pp. 45-49, 61-64, 77-79, 100-102. This paper contains several records which, in the absence of specimens, are not accepted as valid. Among these are the following: *Aechmophorus occidentalis*, *Colymbus nigricollis californicus*, *Ardea herodias*, *Spatula clypeata*, *Lophodytes cucullatus*, *Buteo swainsoni*, *Pandion haliaetus carolinensis*, *Hydrochelidon nigra surinamensis*, *Phaeopus hudsonicus*, and *Charadrius mongolus*. The U. S. Bureau of Fisheries steamer *Albatross* with C. H. Townsend and B. A. Evermann as naturalists stopped at Kodiak in 1888 and 1893. The Harriman Expedition stopped

at Kodiak for a few days in June and July, 1899, and several birds were shot by Ridgway, A. K. Fisher, and L. J. Cole; Rutter and Greeley collected a little for Leland Stanford Jr. University in 1896-97. In 1900 Osgood obtained 21 birds there on his return from his explorations of the base of the Alaska peninsula; these specimens are now in the collections of the Bureau of Biological Survey. A number of birds (51) taken on Kodiak Island in the summer of 1904 by an unknown collector, are now in the Museum of Vertebrate Zoology, at Berkeley,



California, where they were received from W. J. Erskine. In 1906 Niedieck's expedition to Bering Sea stopped at the Island and some few birds were obtained and were reported on by Reichenow. Since 1910 a number of collectors have done some (usually rather little) work on

Kodiak Island; by far the most important collection of recent years is that made by Beck in 1919 for the Biological Survey and Dr. L. C. Sanford (375 skins). The chances are that occasional specimens have been taken by a number of others and are scattered throughout the principal museums of Europe and America with no clue as to their presence.

In 1932 and again in 1934 Dr. Hrdlicka collected a large number of avian bones in old Eskimo middens he was excavating. These have supplied many additional data to our knowledge of Kodiak ornithology.

Kodiak Island lies just south of the base of the Alaska peninsula, from which it is separated by Shelikof Strait. It is about 100 miles in length and 40 miles in breadth, and is thus one of the largest islands in Alaska. In his work on the geography of Alaska, Brooks (U. S. Geol. Surv., Prof. Paper 45, 1906, 21-22) writes that Kodiak is characterized by, "... comparatively low relief—not more than 3,000 or 4,000 feet—and many broad, open valleys with gentle slopes. These highlands have been described as a southern extension of the mountains of the Kenai Peninsula. On the southeastern shore of this island the Russians made their first permanent settlement in Alaska, in 1783. North of Kodiak lies Afognak Island and innumerable smaller ones."

The eastern side of Kodiak Island is heavily forested; the western part is treeless. On the whole the climate is somewhat warmer than the latitude of the region might indicate, as the warm waters of the Japanese current come from the west to Kodiak Island, thence along the coast, east and south.

Although this paper is written by one with no personal field experience on Kodiak Island and is based wholly on specimens and literature, a few words must be permitted regarding the ecological problems presented by the Island. In the first place we have definite botanical evidence to the effect that Kodiak Island is on the border of the forest area of Alaska and that this sylvan boundary is not a stationary, but a rapidly moving one. Thus, Griggs (Ecology, xv, 1934, 88-89, 94) writes of the "migration" of forest vegetation there as follows: "We are quite safe in dismissing human interference from the situation in Alaska and in looking at the forest advance as an event entirely within the orderly course of nature."

* * * * *

"The rapidity of the change indicated by the trees themselves suggested that the former conditions ought to have been recorded by the earlier residents, for Kodiak is an old settlement dating back into the eighteenth century. This expectation turned out to be well founded. The harbor at Kodiak is formed by a group of small islands which protect it from the open ocean outside. The two largest of these are now called Wood or Woody Island and Long Island. As both are covered with heavy forest the appropriateness of the name Woody Island is not obvious. It turns out, however, that Long Island was formerly called Bare Island in contradistinction to Woody Island. This 'Bare Island'

was described by Davidson ('67) as having the 'surfaces rolling and varied with herbage and a few scattering patches of trees.'

"Observation of forest conditions on Long Island in 1930 showed a situation similar to that near the forest front at Kodiak. There were many low-branched mother trees surrounded by younger growth. These were the oldest trees found. There were no fallen logs or old stumps. The oldest stump found had only 108 rings.

"Far antedating the American tenancy is a description left by Martin Sauer, in 1802, historian of the Billings expedition which visited Kodiak in 1790, who writes 'In the interior they have good timber of common pine and on the eastern point of their island which Captain Cook called Cape Greville they have a very considerable forest of pines whence they bring the trees to build their huts and to repair their vessels.' This point, Cape Chiniak, of present charts, is nearly 20 miles from Kodiak across an exposed bay difficult of navigation. It need hardly be added that no one in Kodiak would now think of bringing logs across this bay for the advance of the forest in the one hundred and forty years since this was written has provided plenty of acceptable timber within easy reach of the village.

"Observation that the timber line of Kodiak is probably a moving front is, indeed, in no wise original to the writer but has been suggested by several previous authors. In the first comprehensive survey of Alaskan resources made under American auspices Petrof says: 'On Kodiak Island and the Alaska peninsula the change from a vigorous growth of spruce timber to bare hills and grassy plains is very abrupt and without any corresponding change in soil, temperature, or climatic conditions.' Fernow ('02) on his visit to Kodiak with the Harriman expedition of 1898 first reported briefly the conditions set forth in more detail in the present paper to the effect that the forest had migrated westward in recent years and was probably still on the move.

"So far as Kodiak is concerned, then, the condition of the forest is certain. All lines of evidence converge to prove that during recent centuries it has been advancing into the area originally treeless. But the evidence so far considered gives no testimony as to conditions more than three hundred years ago. Moreover Kodiak is only one point along the thousand-mile forest front in Alaska. What of the rest of the line?

* * * * *

"The pollens in the peat very definitely then amplify the conclusions necessarily drawn from the conditions of the trees themselves and from the testimony of historians. They tell us not only that the forest has reached its present extension very recently but that the present are the first spruce trees that have grown around Kodiak since the beginning of the bogs. The advance of the forest demonstrated by the trees themselves is thus shown to be a long-term secular migration into new territory rather than a phase of a cyclic oscillation back and forth.

"The interpretation of peat deposits has not advanced far enough as

yet to permit any very definite opinion as to the period of time necessary for the accumulation of the eleven feet of peat found at Kodiak. The most that can be said is that this deposit has in all probability accumulated since the last glaciation."

What does this mean as far as the birds are concerned? It seems to have several direct implications; first, that the species inhabiting the forest are relatively recent arrivals on the island. Among such birds may be mentioned the two woodpeckers, Yukon chickadee, and the Kodiak pine grosbeak. The relative newness of the forest may account for the absence of ruffed grouse and help to explain the present uncertain status of the Valdez spruce grouse and the Alaska jay on the island. It also implies that as the edge of the forest progressed westward more and more of the open country became wooded, and thereby the breeding grounds of such species as the two ptarmigans, the western savannah, golden-crowned, Kodiak fox, and Bischoff's song sparrows, etc., became more restricted than formerly. This is also true, but to a lesser extent, of the nesting areas of the shore birds, and may possibly (but not very probably) have had something to do with the local disappearance of the Aleutian tern.

In 1912 came the great volcanic eruptions of Katmai, which, although about 100 miles distant, covered the island with several inches of fine, pulverized volcanic dust, killing off much of the low vegetation of the non-forested portions. This must have had a very marked and serious immediate effect upon the ornithology of the areas involved, but apparently both the vegetation and the birds very quickly came back to their former status, for seven years later when Beck spent a couple months there in the summer of 1919 he apparently found all the small passerine birds in good numbers as he had no difficulty in obtaining long series of them. The speed of the floral and faunal recovery of Kodiak Island should serve an object lesson to those who would explain many biogeographic puzzles by assumed volcanic upheavals. Even in the more dramatic case of Krakatoa in the East Indies (where the volcano was on the island itself, and the havoc far greater) the biological recovery is yearly becoming more and more marked.

In the course of this study I have examined all the Kodiak material in the United States National Museum, the Sanford collection in the American Museum of Natural History, and the Thayer collection in the Museum of Comparative Zoology. Dr. Joseph Grinnell has kindly lent me a Kodiak specimen of the duck hawk and has furnished me with a list of pertinent material in the Museum of Vertebrate Zoology; Professor K. L. Gordon has loaned me the 48 Bretherton specimens in the museum of the Oregon State Agricultural College; Professor L. Benick has supplied me with a list of the Kodiak birds in the Natural History Museum at Lübeck, Germany; Dr. E. Stresemann has sent information on some material in the Berlin Museum; Dr. P. R. Lowe has examined the specimen of Richardson's owl in the British Museum

in my behalf; Dr. B. Stegmann has written me concerning Kodiak material in the collections at Leningrad. Mr. Charles H. Rogers has sent me his observational records of July, 1929, and the duck census files of the Bureau of Biological Survey have been made available by Dr. Oberholser. To all these gentlemen I hereby express my thanks for their assistance.

All in all, I have personally seen about 650 skins, about 150 eggs, and many hundreds of bones of birds from Kodiak Island. Specimens not seen by me, but incorporated in this paper, add approximately 400 more records.

The following annotated list contains all the species recorded from Kodiak Island and all the pertinent data known to me in each case. For each form such generalizations as may be drawn from the data are given and then a list of the specimens collected, and of these the number seen by me in this study.

Some question may be raised with regard to three of the forms included in this list, as is pointed out in the discussion of each case. The birds whose status as members of the Kodiak fauna is open to suspicion are the following:

<i>Phalacrocorax urile</i>	Red-faced Cormorant
<i>Stercorarius pomarinus</i>	Pomarine Jaeger
<i>Perisoreus canadensis fumifrons</i>	Alaska Jay
<i>Penthestes rufescens rufescens</i>	Chestnut-backed Chickadee

A number of authors (Nelson, Macoun, etc.) have listed the bristle-thighed curlew, *Phaeopus tahitiensis*, from Kodiak Island, on the basis of a specimen taken by Bischoff and first recorded by Ridgway in the American Naturalist, 1874, p. 435. However, the specimen, which is of this species and is still in the United States National Museum, came, not from Kodiak Island, but from the Kenai Peninsula. Ridgway apparently forgot this himself as in some of his later writings (Proc. U. S. Nat. Mus., iii, 1880, 222, and Bull. 21, U. S. Nat. Mus., 1881, 68) he gives the record as of Kodiak Island.

ANNOTATED LIST OF SPECIES

Gavia immer elasson Bishop. Lesser Loon.

Bretherton collected a male on November 30, 1891. Otherwise the bird is known only from bones from old Eskimo ruins. Bretherton's bird has an exposed culmen length of 72 mm., and is therefore clearly of the smaller form *elasson*, which is in keeping with the geographic expectation.

Gavia adamsi (Gray). Yellow-billed Loon.

Bischoff collected a specimen of this large loon, November 1, 1868; Fisher obtained an adult (without data), and a young bird in May, 1881. Unfortunately the latter has long since been destroyed; otherwise this species is known from bones found in old Eskimo ruins on the island.

Gavia arctica pacifica (Lawrence). Pacific Loon.

Bretherton records this bird as arriving in the middle of May, nesting in June, and leaving in early September. Bent also writes that the Pacific loon breeds on Kodiak Island. The only actual specimens I have seen from the island are some bones collected by Dr. Hrdlicka from prehistoric habitations, but I understand that a specimen collected in 1904 is now in the collection of the Museum of Vertebrate Zoology, University of California (M. V. Z. 24798).

Gavia stellata (Pontoppidan). Red-throated Loon.

Finsch records a male in nuptial plumage, collected on May 7 on Kodiak Island. This is the only Kodiak specimen other than some bones unearthed by Dr. Hrdlicka, and a few eggs taken by Fisher on June 14, 1882, and in July, 1883.

Colymbus grisegena holboelli (Reinhardt). Holboell's Grebe.

Bischoff collected two specimens, January 16 and February 22, 1868. A bird collected by Fisher (without data) and a single bone (humerus) found there by Dr. Hrdlicka are the only actual specimens of which I know. Bent records this grebe as a winter visitant on Kodiak Island.

Colymbus auritus Linnaeus. Horned Grebe.

Wosnessensky obtained two specimens in November and December, 1842. Bischoff collected three horned grebes, January 1-March 20, 1869; Fisher obtained a male, January 15, 1884. Panshin's collection contained two specimens without data, taken in 1871 and long since destroyed; Reichenow lists a specimen taken on October 22, 1906. Aside from these records, the species is known from osseous remains found there in archaeological excavations.

Diomedea nigripes Audubon. Black-footed Albatross.

Fisher collected a male and a female of this albatross off Kodiak Island, July 18, 1884. Aside from this all that is known of the species in that locality is the fact that archaeological excavations yielded some bones of the black-footed albatross.

Diomedea albatrus Pallas. Short-tailed Albatross.

A pair of birds collected by Fisher in May and August, 1882, and two bones (tarsometatarsus and femur) collected by Dr. A. Hrdlicka are the only definite records for the island. Nelson does not give any actual mention of this albatross on Kodiak Island, but writes that the, "... Kodiak Eskimo call them 'Kay-mah-rye-erk,'" which indicates that its presence must have been noted by the local residents. Bretherton records a bird shot in Shelikof Straits in October, 1893.

Puffinus tenuirostris (Temminck). Slender-billed Shearwater.

Wosnessensky shot a male and a female of this species in July, 1843. The next record of the slender-billed shearwater from Kodiak Island is a specimen collected by W. J. Fisher. Only one other record is known to me, 4 birds in the Thayer collection, now in the Museum of Comparative Zoology, collected on June 15, 1911, by Koren. These 4, including 1 male, 2 adult females, and 1 young female, were taken on the east coast of the island. Mr. Raymond Gilmore informs me that in May, 1933, he saw flocks of several thousand shearwaters off Kodiak Island. These flocks were probably partly, if not largely, of the present species. Probably the sooty shearwater, *Puffinus griseus*, was also present in these groups. Mr. C. H. Rogers observed shearwaters with whitish under wing coverts on Kodiak Island in July, 1929, which he believed to be *griseus*. Swarth records a specimen from Sitkalidak Island, May 15, 1927, and states that Harrold saw a large flock west of Kodiak.

Pterodroma inexpectata (Forster). Scaled Petrel.

One record—a male collected by Fisher, June 11, 1882. This species is the type of *Aestrelata fisheri* Ridgway. The species is to be regarded as an accidental visitant to Kodiak Island.

Fulmarus glacialis rogersi Cassin. Pacific Fulmar.

Fisher collected a female on August 30, 1882; Greeley obtained one on July 20, 1897 (reported on by Grinnell, 1901). Otherwise this species figures in the Kodiak avifauna on the basis of a skull unearthed there in an old Eskimo midden by Dr. Hrdlicka. The date of Fisher's specimen is noteworthy as this species is regarded as a winter resident from the Aleutian Islands southward, its breeding range being confined to the islands in Bering Sea and the adjacent Arctic Ocean. Rogers informs me that he saw a dozen of these birds, mostly in dark phase plumage, off the north shore of Kodiak Island, on July 25, 1929, and several more of both types off the east coast of the island (between the town of Kodiak and Shearwater Bay) a few days later.

Oceanodroma furcata (Gmelin). Fork-tailed Petrel.

Wosnessensky collected a single specimen in the summer of 1843. Finsch mentions a specimen from Kodiak Island in the Leiden Museum. Fisher collected another, a male, May 21, 1883. He noted that the species is said to breed nearby, and collected a number of eggs on the island in late May and early June, 1884.

Phalacrocorax carbo sinensis (Shaw and Nodder).
Chinese Cormorant.

One record—a humerus from an old Eskimo midden excavated by Dr. Hrdlicka. The Chinese cormorant must be looked upon as an accidental visitant on Kodiak Island.

Phalacrocorax auritus cinctatus (Brandt).
White-crested Cormorant.

The white-crested cormorant breeds on Kodiak Island. Judging by the absence of specimens of this form and the presence of examples of the next species in the Bischoff, Fisher, and Hrdlicka collections, it would seem as though this bird is not as common on the island as the pelagic cormorant. Wosnessensky obtained two specimens, 1842, 1843. Willett observed it nesting there. I am informed that in the collection of J. W. and J. Mailliard there are 2 eggs of this cormorant, collected on Kodiak Island, in June, 1880. In the Museum of Vertebrate Zoology, there are 4 skins collected September 2-20, 1904.

Phalacrocorax pelagicus pelagicus Pallas.
Pelagic Cormorant.

Wosnessensky obtained eleven examples of this bird in the years 1842 and 1843; Bischoff collected four specimens of the pelagic cormorant on June 20, 1868; Fisher obtained a young female in June, 1882; Pan-shin's collection contained a specimen taken in 1871; Hrdlicka collected large quantities of bones referable to this species in old Eskimo middens during his excavations in 1932 and 1934. Beck obtained specimens of this cormorant in the summer of 1919. Judging by the number of bones found, it would seem that this bird is decidedly common on Kodiak Island. Fisher collected 6 sets of 3 to 4 eggs each in July, 1882. There are 5 skins, collected in 1904, in the Museum of Vertebrate Zoology. Beck collected 4 of these birds in the summer of 1919 (now in the Sanford collection).

Phalacrocorax urile (Gmelin). Red-faced Cormorant.

Bretherton collected 2 eggs, supposed to be of this species, on Kodiak Island, June 19, 1894. This is the only record I have found of this cormorant on the island, and inasmuch as the eggs of the several species that occur in that general region are by no means diagnostic, I do not feel that the identification, unaccompanied by specimens of the birds, can be taken as definite. Bretherton writes that the red-faced cormorant

is a "common but not plentiful" resident on the island, more numerous in summer than in winter. The question remains as to whether he knew this species accurately.

***Cygnus columbianus* (Ord).** Whistling Swan.

The whistling swan figures in the Kodiak avifauna on the basis of osseous remains found in prehistoric Eskimo sites, and on a set of 5 eggs taken on May 17, 1903, now in the Barnes collection. Bean recorded it as breeding on the island.

***Cygnus buccinator* Richardson.** Trumpeter Swan.

Three bones, representing at least two individuals, found in old Eskimo middens by Dr. A. Hrdlicka, are the only records for the trumpeter swan on Kodiak Island.

***Branta canadensis* subsp.** Canada Goose.

In his account of the Billing Expedition, published in 1802, Martin Sauer (p. 179) describes the wild geese seen on Kodiak Island as follows: "Goose with a black bill; the upper mandible has a callous elevation. A triangular white spot runs from the throat along the cheeks on both sides, to the hind part of the head. The bottom of the under-part of the neck, vent feathers, belly, and coverts of the tail, white; breast, back, and wings dusky brown; legs a dull dark colour." This refers obviously to the Canada goose and is one of the earliest avian records for the island. Bretherton writes that Canada geese pass over the island in migration in spring and autumn, but seldom stop to rest, especially in the spring. In February, 1930, a Canada goose was seen on Kodiak Island, by one of the field agents of the Biological Survey, a man named Cornelius. Dr. Oberholser tells me he considers the record and the recorder entirely reliable. This is the only winter record known to me.

***Branta nigricans* (Lawrence).** Black Brant.

Bretherton writes that migrants arrive on Kodiak in the middle of April and that while most of the birds pass on to the north, a few may remain to breed. (It is utterly unlikely that any of these birds breed on the island; Bretherton here made a poor assumption). Macoun records a pair shot on Kodiak Island. Aside from this, the black brant figures in the list of Kodiak birds on the basis of an injured skull from a prehistoric Eskimo midden. This skull was at first wrongly identified as belonging to Ross's goose, and was so published.

***Philacte canagica* (Sevastianoff).** Emperor Goose.

The emperor goose is known from Kodiak Island only from osseous remains. It probably occurs there in winter occasionally. Macoun records a bird shot 20 miles south of the island—not exactly a Kodiak

record, as mainland records less than that distance away, are not included here.

Anser albifrons albifrons (Scopoli).

White-fronted Goose.

The white-fronted goose takes its place in this list on the strength of a few bones found in his excavations on Kodiak Island by Dr. A. Hrdlicka. The subspecific identity is purely a geographical assumption.

Chen rossi (Cassin). Ross's Goose.

The status of Ross's goose in the Kodiak avifauna is unknown, but it is probably an accidental visitant there as the locality is rather far from its normal range. A bone collected in an archaeological site is the only record for the island.

Anas platyrhynchos platyrhynchos Linnaeus. Mallard.

Wosnessensky obtained four specimens of this duck in 1842-1843. Bischoff collected a mallard on Kodiak Island, April 8, 1868. A large number of bones attributable to this species were unearthed by Dr. Hrdlicka in 1934; enough to indicate definitely that the species must occur in numbers and with regularity (the bones were found in all depths excavated) on the island. It is found there in numbers throughout the year. Bean wrote that it breeds on the island. Fisher obtained 5 eggs in July, 1882. In the duck census files of the Biological Survey are a great many Kodiak observational records, involving large numbers of individual birds each month, covering the entire year. Bretherton found it breeding in small numbers, and noted that large numbers stop off on the island during migration.

Mareca americana (Gmelin). Baldpate.

One record substantiated by a specimen—a male recorded by Finsch (1873); and a number of observational records by field agents on the duck census work of the Biological Survey, covering the months of March, May, June, September, and November. Bretherton, on the basis of W. J. Fisher's notes, calls it not common on Kodiak Island, but Bretherton's identification is open to question.

Dafila acuta tzitzihua (Vieillot). American Pintail.

Bischoff obtained four specimens of the pintail on June 26 and August 1, 1868; Bretherton saw four birds on May 11, 1894. A number of observational records made by Reilly and Cornelius, observers for the duck census work of the U. S. Biological Survey, are in the files of that organization. The Natural History Museum of Lübeck, Germany, has a Kodiak example of this duck, obtained from a dealer named Heller (it is not clear whether Heller was the collector as well or not).

***Nettion carolinense* (Gmelin).** Green-winged Teal.

Bischoff collected three specimens on August 10, 1868. Bretherton writes vaguely of a few specimens (migrants) obtained on the island. These are the only records for the species on Kodiak Island. Rogers saw a female with five or more ducklings on a small pond at Three Saints Bay, July 28, 1929.

***Nyroca americana* (Eyton).** Redhead.

According to the A. O. U. Check List, this duck occurs casually on Kodiak Island. If this statement is based on further data than the one bird collected by Rutter (reported by Seale, 1898), I have been unable to learn of them.

***Nyroca marila* (Linnaeus).** Greater Scaup Duck.

Three records from Kodiak Island: 1. a bird shot by Wosnessensky in 1842; 2. a male collected by Fisher in January, 1884; 3. a specimen, March 28, 1894, recorded by Bretherton. I have been able to find no trace of the first two specimens. Bretherton's bird, loaned me by the Oregon Agricultural College, has been examined. Bretherton records seeing a flock of considerable size on May 19, 1894.

***Nyroca affinis* (Eyton).** Lesser Scaup Duck.

The lesser scaup duck is known from Kodiak Island only from osseous remains. In the files of the Biological Survey are a number of observational records of "blue-bills" from Kodiak, but it is not possible to allocate them specifically. They merely show that the birds are commoner there than the few records here given indicate.

***Glaucionetta clangula americana* (Bonaparte).**

American Golden-eye.

Fisher collected a male bird in January, 1884, and another without data; Hrdlicka found some bones in an old Eskimo ruin excavated in 1934. These are the only records known to me of the American golden-eye in Kodiak Island. The subspecific identification of the bones is purely a geographical inference. One of the field agents of the U. S. Biological Survey's duck census work, a man named MacLeod, reported seeing 300 of these birds—February and March, 1930.

***Glaucionetta islandica* (Gmelin).** Barrow's Golden-Eye.

Wosnessensky collected two specimens during his sojourn on the island in 1842-1843. A pair of birds was collected by Fisher in December, 1881. One of these specimens has long since been destroyed. Bretherton obtained a female on January 18, 1892 (specimen seen). A number of indefinite observational records, by Johnston, one of the duck census field agents of the U. S. Biological Survey, are in the files of that organization. He reported seeing 98 birds in May, 1930, and 14 in June, 1930. Without specimens to corroborate them, those records are open to question.

Charitonetta albeola (Linnaeus). Buffle-head.

One specimen, a male in good plumage, taken in 1871 (no further data) by Dr. Panshin, in the United States National Museum, has been examined in the present study. Bean found this duck breeding at Karluk River, Kodiak Island. Dr. Stegmann informs me that Wosnessensky collected three specimens in 1842-1843. Johnston, an observer for the duck census work of the U. S. Biological Survey, reported seeing 74 buffle-heads on Kodiak in May, 1930, and 8 more in June of the same year.

Clangula hyemalis (Linnaeus). Old-squaw.

Wosnessensky shot an example of this duck during his visit to Kodiak Island, 1842-1843. Bischoff collected nine specimens between December 4, 1868 and January 10, 1869, and March 10-20, 1869; Fisher shot a male in January, 1882, and another in 1884; Panshin collected two unsexed birds in 1871; Hrdlicka's excavations yielded some bones of this duck. Bretherton found it numerous in winter, November to April; he did not see it in the summer on the island. The old-squaw is a duck one might well expect to be common on Kodiak Island, as it occurs in numbers in all the adjacent territories. Figgins found it "... especially numerous about ... Kodiak Islands."

Histrionicus histrionicus pacificus Brooks.

Western Harlequin Duck.

Dr. Stegmann writes me that Wosnessensky obtained two examples in 1842-1843. Bischoff collected eight specimens of this duck between June 13 and September 2, 1868; Panshin obtained one in 1871; Fisher shot two males in December, 1881, and two more in January and February, 1884. Fisher's specimens have long since been destroyed by moths, a fate all too frequent with his material, due to faulty methods of preservation. Bretherton found the species throughout the year on Kodiak Island; breeding there in June, and obtained a number of specimens, 5 of which I have seen in the present study. Osgood obtained a female on October 3, 1900 (specimens examined). Hrdlicka's excavations yielded osseous evidence of this species, the subspecific determination being inferential on geographic grounds. In the Thayer collection at the Museum of Comparative Zoology, there is a specimen taken June 21, 1911 on Kodiak Island. Several observational records are in the files of the U. S. Biological Survey. The Museum of Vertebrate Zoology of the University of California has four Kodiak specimens taken in July and September, 1904. Copley Amory shot a male on July 7, 1914. This specimen is in the Museum of Comparative Zoology.

Polysticta stelleri (Pallas). Steller's Eider.

Wosnessensky shot three of these ducks in 1842-1843. Bischoff collected six Steller's eiders, January 4-March 18, 1868; Panshin obtained

two specimens in 1871; Fisher took three males in January, February, and June, 1882, respectively, and five more males in February, 1884; Bretherton shot an adult and an immature female on November 28 and 30, 1893. The species is probably found on Kodiak Island chiefly in the winter, although Fisher's June bird (unfortunately no longer in existence) is hard to reconcile with this statement. The breeding range of Steller's eider is confined to the Bering Sea region and the arctic coasts of eastern Siberia (Taimyr Peninsula) and Alaska (Point Barrow, south, "... perhaps to the Aleutian and Shumagin Islands, and Alaska Peninsula)." (A. O. U. Check List, 4th ed., 1931, 55). Other Kodiak specimens known to me are one contained in the Sennett collection in the American Museum of Natural History, two in the Princeton Museum of Zoology, and one in the Henshaw collection in the British Museum. The last mentioned is another summer bird, taken in June. Johnston, one of the Biological Survey's field agents, reported seeing 22 of these ducks in December, 1929, on Kodiak Island; Phillips writes that it is common in the winter on Kodiak Island as does Bretherton, who gives as the dates of its stay November to the beginning of April.

Somateria v-nigra Gray. Pacific Eider.

The Pacific eider breeds on Kodiak Island. It is surprising, therefore, that in spite of the length of time he spent on the island and the size of his collections, Bischoff did not obtain examples of this duck. Fisher got a male in May, 1882; Turner saw the species, "... in the neighborhood of Kodiak ..." Hrdlicka obtained several bones of this eider in old Eskimo middens. There are three eggs, taken in June, 1880, in the J. W. and J. Mailliard collection; Fisher obtained 4 sets of 7-8 eggs each, on June 14, 1882. According to Bretherton, the birds arrive about May 1; they arrive in pairs and start nesting at once.

Somateria spectabilis (Linnaeus). King Eider.

The king eider is a common bird, chiefly a winter visitant on Kodiak Island, from November to April. Wosnessensky obtained two specimens in the winter of 1842-1843. The Henshaw collection, in the British Museum, contains a specimen taken in December, 1880. Fisher collected a male and a female in January, 1882, and another male in January, 1884. Bretherton shot a male on February 3, 1894. Aside from these, the only actual specimens taken there, known to me, are a good number of bones unearthed during the course of Hrdlicka's archaeological excavations. In the files of the duck census work of the U. S. Biological Survey are some observation records made by Johnston, one of that organization's field agents. He saw 23 king eiders in May, 1930, and 11 in June of the same year. Phillips definitely states that it breeds on Kodiak Island.

Arctonetta fischeri (Brandt). Spectacled Eider.

The spectacled eider is probably a rare winter visitant on Kodiak Island. The only actual record known to me is a single bone (humerus) from a prehistoric Eskimo midden. Phillips quotes Littlejohn, a field agent of the Biological Survey, to the effect that the species is, "practically absent at the southwest end of Kodiak Island in winter."

Melanitta deglandi (Bonaparte). White-winged Scoter.

The white-winged scoter apparently occurs on Kodiak Island in numbers as Hrdlicka collected a considerable number of bones of this duck in old Eskimo middens. Fisher shot a male in February, 1882. Bretherton writes that he found it on the island only in the winter months. A number of indefinite observational records are in the duck census file of the U. S. Biological Survey. As many as 87 birds are recorded in one monthly report (June, 1930). However, in the absence of specimens, these records are not looked upon as entirely definite.

Melanitta perspicillata (Linnaeus). Surf Scoter.

The surf scoter is definitely known from Kodiak Island only from one specimen obtained by Wosnessensky during his visit, 1842-1843, and from osseous remains obtained by Dr. Hrdlicka there in 1932 and in 1934. The number of bones found indicates that the species is of regular occurrence. Johnston, an observer living on Kodiak Island, reported to the U. S. Biological Survey that in May, 1930, he saw 68 surf scoters there.

Oidemia americana Swainson. American Scoter.

Bischoff collected two specimens in March, 1869. W. J. Fisher collected a male in February 1882, which has been destroyed, so it is not possible to check the identification, and another without data. Bretherton collected two birds in 1892 and 1894, which I have seen. Finsch mentions a Kodiak specimen in the Bremen Museum. Otherwise the only definite evidence of this scoter on the island is some bones from prehistoric Eskimo ruins there. Bretherton records it as common there in winter (November to May).

Mergus merganser americanus Cassin. American Merganser.

All that is known to me of the American merganser on Kodiak Island is the following. Bean shot an adult female near St. Paul, on the eastern end of the island, July 13, 1880, and recorded an egg from "Wooded Island, Kodiak." Nelson merely refers to Bean's specimen, but gives the data as July 30, which is incorrect. Rutter collected a specimen in 1896, which went to the Academy of Natural Sciences of Philadelphia (Seale, 1898). Fisher obtained 12 eggs in July, 1882, and 14 in July, 1883, said to be of this duck. Bretherton states that the bird nests in June on Kodiak Island.

Mergus serrator Linnaeus. Red-breasted Merganser.

Wosnessensky obtained a red-breasted merganser in 1842-1843. Bischoff collected 1 specimen on June 20, 1868, and 11 others without data. The species probably occurs on Kodiak Island chiefly in the summer. That it breeds there is proved by eggs collected in July, 1882, and July, 1883, by W. J. Fisher. Professor Benick informs me that there is a Kodiak example of the red-breasted merganser in the Natural History Museum of Lübeck.

Accipiter atricapillus (Wilson). Goshawk.

Wosnessensky shot one specimen during his visit to Kodiak Island, 1842-1843. Bischoff collected a goshawk on July 20, 1868; Fisher shot an adult and a young one in October, 1882. Bretherton shot an immature bird on September 12, 1893. Harrold saw one on Sitkalidak Island, May 15, 1927. These are the only Kodiak records known to me. Dr. Stegmann writes me that he recalls having seen one other specimen of this hawk from Kodiak Island in the collections of the Academy of Sciences at Leningrad. I have personally examined the Bischoff, Fisher, and Bretherton specimens.

Accipiter velox velox (Wilson). Sharp-shinned Hawk.

Bischoff collected a sharp-shinned hawk on Kodiak Island, March 10, 1869. This is the only record of which I know.

Buteo lagopus s.-johannis (Gmelin).

American Rough-legged Hawk.

The inclusion of this hawk in the present list is based on three specimen records—a bird collected by Bischoff on September 8, 1868, a specimen in the dark phase plumage, and two collected by Beck in the summer of 1919 (one dark, one pale phase), and one of Bretherton's specimens and statement that it is a summer resident on Kodiak Island, breeding in the interior of the island. I have seen all the above mentioned examples. The Bretherton bird, kindly loaned me by the Oregon Agricultural College, is in the dark phase.

Haliaeetus albicilla (Linnaeus). Gray Sea Eagle.

The gray sea eagle must be looked upon as a casual visitant on Kodiak Island, whence it is known only on the basis of some osseous remains found during archaeological excavations by Dr. Hrdlicka.

Haliaeetus leucocephalus alascanus Townsend.

Northern Bald Eagle.

The bald eagle is very common on Kodiak Island. Wosnessensky shot one in 1842 or 1843; Bischoff collected seven specimens, June 10-July 15, 1868; Panshin shot a female in 1871; Rutter obtained 2 birds in the winter of 1896-1897; Seale saw eagles there in 1896; Crabb shot

one in May, 1921; Hrdlicka gathered quantities of their bones in the course of his archaeological excavations in 1932 and in 1934. Bretherton estimated the eagle population of the island at only a dozen breeding pairs during his sojourn (1892-1895) there, but this seems hardly likely. He collected a young bird in May, 1894 (now in the Oregon Agricultural College Museum). Swarth mentions 2 eggs collected on Kodiak Island, May 22, 1927.

Thalassoaeetus pelagicus (Pallas). Steller's Sea Eagle.

Steller's sea eagle was first reported from Kodiak Island by Gilbert who recorded a bird shot there on August 10, 1921. In Hrdlicka's 1934 collection were several bones of this bird. The species must be looked upon as a casual visitant to the island.

Circus hudsonius (Linnaeus). Marsh Hawk.

One record—a male collected by Bretherton on April 2, 1894, is now in the museum of the Oregon Agricultural College, to which institution I am indebted for the loan of the specimen.

Falco rusticolus uralensis Sewertzov and Menzbier.
Asiatic Gyrfalcon.

Two records, of which we may treat the second one first: a male collected by Fisher on September 18, 1882. The bird has been compared with the type of *alascanus* Swann, and found to be very similar, and inasmuch as this form is considered identical with *uralensis*, the latter name is used. However, typical *uralensis* is said to have the outermost (first) primary as long as the third, while in the present specimen and the type of *alascanus*, the first primary is noticeably shorter than the third. Dr. Panshin obtained a gyrfalcon in 1871; his specimen is no longer extant.

Falco peregrinus anatum Bonaparte. Duck Hawk.

According to Nelson, this hawk is said to be found on Kodiak Island. Bretherton records it as a common year round resident and states that it nests there. Its numerical status seems open to question, however. I have seen one specimen of this race from Kodiak Island, a male collected on September 10, 1904, by an unknown collector. This specimen, kindly loaned me for use in the present study by Dr. Joseph Grinnell, is in the Museum of Vertebrate Zoology. It is definitely *anatum*, not *pealei*. Whether this subspecies should be looked upon as a non-breeding migrant or vagrant on Kodiak Island, or as the nesting bird there is uncertain. It is within the realm of probabilities that the breeding bird may be *pealei* Ridgway.

Falco columbarius bendirei Swann. Western Pigeon Hawk.

Bischoff collected three pigeon hawks on Kodiak Island, August 11-17, 1868. Of these, two, both immature, have been examined by me;

the third was given away many years ago. Some time ago Mr. Peters examined these specimens and marked "*F. c. bendirei*" on the labels, an identification with which I agree. However, in his check-list (1931) he writes that *suckleyi* is the race that breeds on Kodiak Island. This statement is probably a slip of the pen. Dr. Stegmann writes me that there are two Kodiak specimens in the collections of the Academy of Sciences at Leningrad. Bretherton, calling this hawk, "*Falco sparverius*," considered it a "tolerably common" summer resident on the island. Townsend obtained a pigeon hawk on Kodiak Island, August 15, 1888. Beck shot a female and a young male on August 22, 1919; Kleinschmidt obtained an adult male on May 29, 1913. These three birds I have seen (Sanford collection) in the present study. Harrold saw a pair on Sitkalidak, May 15, 1927. No further data concerning this bird as a member of the Kodiak fauna are known to me.

***Canachites canadensis atratus* Grinnell.**

Valdez Spruce Grouse.

The spruce grouse is established in the list of Kodiak birds as far as I know on the basis of one specimen recorded from there. Baird, Brewer, and Ridgway (1874) definitely mention a Kodiak specimen. I have not been able to trace this specimen, however. Bendire, in describing its range, writes that it extends north, "... to Alaska (reaching the coast at Kodiak, St. Michaels, etc.) ..."

***Lagopus lagopus alexandrae* Grinnell.**

Alexander's Ptarmigan.

Wosnessensky shot three of these ptarmigan during 1842-1843. Bischoff collected a male, June 12, 1868; of this specimen I have been unable to find any trace. Panshin obtained a male in 1871; his specimen likewise seems to have been lost or destroyed. Bretherton records it as a permanent resident on the island. I have seen a specimen of his, taken on January 25, 1892. Moreover, the United States National Museum has a male collected on Kodiak Island, April 13, 1892, by Evermann, and Bent mentions two Kodiak taken birds. Rutter (reported on by Grinnell) collected six individuals in the winter of 1896-1897; A. K. Fisher collected a male on July 2, 1899; Osgood obtained a female, still in summer dress, on October 3, 1900; Beck shot 35 specimens in July, 1919 (34 now in the Sanford collection in the American Museum of Natural History; 1 in the collection of the U. S. Biological Survey). A set of 11 eggs, taken by John Koren on Kodiak Island, on June 25, 1911, is now in the Thayer collection in the Museum of Comparative Zoology.

***Lagopus rupestris kelloggae* Grinnell.**

Kellogg's Ptarmigan.

Kellogg's ptarmigan seems to be slightly the commoner of the two species on Kodiak Island, if we may judge by the number of specimens

taken, but appears to be restricted to the higher parts of the island. Fisher collected a young and two old birds, April 12, 1882; Evermann shot two males, April 14, 1892; Townsend obtained a female, June 7, 1893. In addition to these there is another specimen, a male taken April 14, 1892, probably collected by Townsend. In his map of the distribution of the Alaskan forms of this species, Swarth indicates a Kodiak record. In his 1932 excavations of prehistoric ruins, Hrdlicka found a humerus of this species. Grinnell records a specimen in the collections of Leland Stanford Jr., University. The April specimens are in full winter plumage; the June 7 example is in breeding plumage. It looks, from this, that the prenuptial molt must take place between the middle of April and the first week of June. Osgood collected a male bird on October 8, 1900; Beck shot 48 birds in July, 1919. (46 in the Sanford Collection, 2 in that of the Biological Survey).

***Grus canadensis canadensis* (Linnaeus).**

Little Brown Crane.

The little brown crane is known from Kodiak Island on the basis of a specimen collected there by Bischoff, of which I can find no trace other than Ridgway's mention (1880), and a few bones collected there by Hrdlicka in 1934.

***Haematopus bachmani* Audubon.** Black Oyster-Catcher.

Wosnessensky obtained two oyster-catchers in 1842-1843. Bischoff and W. J. Fisher seem to be the only others who have collected specimens of this bird on Kodiak Island. Bischoff got four on June 27, 1868. Only one of these is still in the U. S. National Museum, the others have been sent out in exchange many years ago. W. J. Fisher shot a female in June, 1882, but the specimen is not to be found or any clue as to its fate. Dall and Bannister and Nelson write that the black oyster-catcher is abundant on the island. Bretherton records it as occurring throughout the year, and probably breeding there. That this bird breeds on Kodiak Island is proved by four sets of 3 eggs each, collected there in July, 1882, by W. J. Fisher.

***Charadrius dubius curonicus* Gmelin.**

Little Ringed Plover.

The little ringed plover is of accidental occurrence on Kodiak Island, where it has been taken once.

***Charadrius semipalmatus* Bonaparte.** Semipalmated Plover.

One record—a female taken on August 18, 1892, by Bretherton, now in the museum of the Oregon Agricultural College, to which institution I am indebted for a loan of the specimen.

***Pluvialis dominica fulva* (Gmelin).** Pacific Golden-Plover.

Bischoff obtained 3 specimens on May 13, 1869, only one of which is available for study. Fisher shot a male on May 14, 1882, which has

long since been destroyed. Beck collected 1 bird in 1919; now in the Sanford collection in the American Museum of Natural History. Cooke quotes Bischoff to the effect that May 13 is the date of arrival of spring migrants on Kodiak Island. However, Bretherton writes that the golden plover occurs there from April 28 to May 16 and from August 28 to October 10 (1892-95), and that it does not breed on Kodiak Island.

Squatarola squatarola (Linnaeus). Black-bellied Plover.

The only Kodiak record I have found is a specimen referred to by Salvin and Godman in their description of this species in their great work on Central American birds.

Aphriza virgata (Gmelin). Surf-Bird.

Turner saw several surf-birds on Kodiak Island in 1881, but was unable to collect any specimens. Ridgway states that this species is a migrant on the island. I have not been able to learn of any actual specimens from there.

Arenaria melanocephala (Vigors). Black Turnstone.

Bischoff collected two specimens of this bird on August 9 and 10, 1868; Fisher also collected one, without data. Bretherton found it breeding and collected specimens on Kodiak Island, one of which I have seen. The Bischoff and Fisher birds have also been examined. I know of no other data concerning the black turnstone on Kodiak Island.

Capella delicata (Ord). Wilson's Snipe.

Bischoff shot an example on September 14, 1868. This is the only actual Kodiak specimen known to me. Bent states that this snipe breeds on Kodiak Island.

Actitis macularia (Linnaeus). Spotted Sandpiper.

A specimen from Kodiak Island, listed by Pallas as "*Tringa leucop-tera*" is identified by Finsch as probably a young *Actitis macularia*. Schalow, editing Brandt's manuscript on Aleutian ornithology, identifies it with *Actitis hypoleucos*. If the latter identification be correct (which is doubtful) it is the first time that species has been recorded from North America. The probabilities are that the bird is *macularia*, possibly a young example. The status of the spotted sandpiper on the Kodiak list is definitely established, however, by four specimens collected by Wosnessenky during 1842-1843.

Heteroscelus incanus (Gmelin). Wandering Tattler.

Three specimens are known to me: a bird collected by Amory and Koren in 1914 (no data), now in the United States National Museum, and another taken by Beck in 1919, now in the Sanford collection in the American Museum of Natural History, and one taken by Bretherton in 1892. Bretherton writes that this tattler is common in summer

and probably breeds on Kodiak Island. Bretherton's bird has been loaned to me by the Oregon Agricultural College museum; it is a summer bird (July 26).

Totanus melanoleucus (Gmelin). Greater Yellow-legs.

One specimen known to me—an adult bird in breeding plumage, obtained in 1871 (no further data) by Dr. Panshin, and now in the collections of the United States National Museum. Bretherton writes that the species occurs on Kodiak Island from May to September, and probably breeds there. He collected several specimens, none of which I have been able to trace, and I therefore cannot corroborate his statement.

Totanus flavipes (Gmelin). Lesser Yellow-legs.

Two records: 1. a bird collected by Bischoff (no data), and long since given away to a school collection. It is therefore impossible to check the identification, and the status of this record for the Kodiak avifauna may be considered open to question. 2. Bean (1889) records the species from Karluk River, Kodiak Island.

Arquatella ptilocnemis couesi Ridgway.
Aleutian Sandpiper.

Nelson writes that this sandpiper winters on Kodiak Island. The A. O. U. Check List (3rd ed.) states that it breeds there. Bretherton saw large flocks in February, 1893, but not at other times. Wosnessensky collected four specimens in the years 1842 and 1843. In the catalogue entries of the Bischoff collection are three "*Tringa maritima*," taken on Kodiak Island, January 20 and October 28, 1868. None of these specimens has been found, although a special search in the collection was made. I cannot, therefore, place these records definitely as *couesi*, but that is probably what they were. Bretherton collected 3 birds in 1892 and 1893; these I have seen; they are *couesi*. Rutter (as recorded by Grinnell) collected a male on November 5, 1896 and 2 females on April 3, 1897. The Thayer collection in the Museum of Comparative Zoology contains Kodiak material of this form.

Pisobia bairdi (Coues). Baird's Sandpiper.

Dall and Bannister mention several Kodiak specimens taken by Bischoff on August 15, 1868. In the catalogue entries of the United States National Museum there is but a single entry for this species, a specimen taken on August 15, 1868. This bird has been disposed of in some unrecorded manner many years ago and its identification cannot be confirmed. Townsend procured a specimen on the island, August 15, 1888, which, fortunately, is still preserved in the national collections and definitely places this sandpiper in the Kodiak avifauna. Bretherton writes that he collected a female on November 15, 1893, the only one he saw during 3 years of constant residence on the island. I have not seen his specimen.

Pisobia minutilla (Vieillot). Least Sandpiper.

Not definitely recorded in literature from Kodiak Island. The only published reference known to me is Bent's statement (1927) that it probably breeds on the island. Whether he had actual knowledge of its occurrence there in the breeding season but no definite nesting records, or if he was merely stating its range in a general way, is not wholly clear. Actual records, however, do exist: a series of specimens taken by Koren June 22-27, 1911, now in the Thayer collection in the Museum of Comparative Zoology. This series contains 4 adult males, 2 adult females, and 9 downy young. The adults are all in much abraded plumage.

Limnodromus griseus scolopaceus (Fay).
Long-billed Dowitcher.

One record—two specimens collected by Wosnessensky in 1842-1843, now in the Zoological Museum of the Academy of Sciences at Leningrad.

Ereunetes pusillus (Linnaeus). Semipalmated Sandpiper.

One record, a specimen collected by Bischoff, on August 10, 1868, together with some of the next species. Finsch's record of "*semi-palmatus*" I have placed under the western sandpiper on the grounds of greater probability, *maurii* seeming to be the commoner of the two species there. I have not been able to learn anything about the actual specimen.

Ereunetes maurii Cabanis. Western Sandpiper.

Dall and Bannister wrote that this little sandpiper is very common on Kodiak Island, apparently on the basis of Bischoff's specimens and notes (if any). Bischoff collected four examples there, August 10-15, 1868 and one without data. Only one of these is still in the United States National Museum, an unsexed specimen dated August 13, 1868. It serves to establish the western sandpiper as a definitely known Kodiak species. The specimen collected by Bischoff now in the British Museum (Sharpe, 1896) is a young one and may be *maurii* or *pusillus*.

Lobipes lobatus (Linnaeus). Northern Phalarope.

As far as I have been able to learn, there are but two records of the northern phalarope on Kodiak Island—two specimens obtained by Wosnessensky in July-August, 1843, and an adult male and 2 young collected there on June 25, 1911 and now in the Thayer collection in the Museum of Comparative Zoology.

Stercorarius pomarinus (Temminck). Pomarine Jaeger.

Bent gives a migration date of August 15 for this species on Kodiak Island. I am not certain as to the basis of this record as I have seen no specimens from the island, and jaegers are not always easy to iden-

tify in the field. Furthermore, in the United States National Museum there is a young bird taken on August 15, 1888 by C. H. Townsend, which was originally identified as a pomarine jaeger, but which turns out to be a parasitic jaeger. If this specimen was the basis of Bent's record, that record will have to be deleted. Bretherton writes that he collected a young bird in July, 1893 (I have not been able to trace this specimen), and that in 1894 he observed a pair of adults all through the summer. He did not find a nest, but considered the birds as probably breeding there. I cannot vouch for the accuracy of his identification.

Stercorarius parasiticus (Linnaeus). Parasitic Jaeger.

Wosnessensky obtained one example in the years 1842-1843. Bischoff collected two specimens on June 12 and 24, 1868, the latter of which, an adult in the dark phase plumage, is still in the collections of the United States National Museum. Townsend obtained a young bird on August 15, 1888, and a subadult example on August 18, 1888, both of which have been examined by me in the present connection. The August 15 bird is a first year specimen and is the most rust-colored example I have seen (out of a good series available for study); this is probably due to the freshness of the feathering; none of the rusty tips have worn off. This is the specimen mentioned under the preceding species. Cooke records eggs taken on Kodiak Island June 19, 1931; Bent also notes this jaeger as breeding on the Island; Fisher collected three eggs there on June 19, 1884. The Thayer collection contains an egg taken by Koren on June 19, 1911, on Kodiak Island, and a bird shot on June 13, 1911. Dr. Grinnell informs me that a specimen collected in 1904 by an unknown collector is now in the Museum of Vertebrate Zoology.

Stercorarius longicaudus Vieillot. Long-tailed Jaeger.

Known as a member of the Kodiak avifauna only on the basis of a few bones found in prehistoric Eskimo middens.

Larus hyperboreus Gunnerus. Glaucous Gull.

Turner writes that, "... at Karluk, on the northwest shoulder of Kodiak, I saw countless thousands of these Gulls in August, 1881, as they were on the cliffs near the fishing station." It is possible that Turner may have confused *Larus glaucescens* with the present species, as while others have collected the latter form, the only actual Kodiak specimens of *hyperboreus* seen by me are four bones unearthed in an old archaeological site by Hrdlicka in 1932. Macoun mentions a bird in the Henshaw collection, and 3 eggs taken in June, 1880, now in the Mailliard collection, are the only other records I have found.

Larus glaucescens Naumann. Glaucous-winged Gull.

The glaucous-winged gull occurs plentifully and breeds on Kodiak Island. Wosnessensky shot three in 1842-1843; Bischoff collected six specimens in January and August, 1868; Fisher obtained one in 1882;

Panshin shot a two year old individual in 1871; and Bretherton obtained an adult on May 20, 1892. Two of Bischoff's August birds are very young examples, not fully grown or feathered. W. J. Fisher collected numbers of eggs in 1883 and 1884. Hrdlicka collected a good many bones of this gull in the course of his archaeological diggings in 1932 and 1934. Bretherton collected two eggs on June 19, 1894. According to information received from Dr. Grinnell, the Museum of Vertebrate Zoology possesses 3 Kodiak specimens of this gull, taken in 1904 by an unknown collector. Koren shot a female on June 24, 1911 (now in the Thayer collection). Bretherton writes that these gulls arrive in April and May and remain until October; they nest in May, June, and July.

***Larus argentatus smithsonianus* Coues.**

American Herring Gull.

The only definite Kodiak specimens known to me are two birds collected by Wosnessensky in 1842 or 1843; another taken on August 30, 1906 and a number of bones unearthed from old Eskimo middens by Hrdlicka in 1934. However, the species must have been observed, if not collected, otherwise as well, since Bent writes that the breeding records of this bird from Kodiak Island are not substantiated by specimens and may refer either to *smithsonianus* or *thayeri*. I do not know where he got the breeding records to which he refers; I have found no such published data. Reichenow (1909) definitely identifies his specimens as *smithsonianus* and I have assumed that the birds from Kodiak refer to the same race. Many years before, Bretherton identified his observational records to this subspecies. He found this gull much less numerous than *Larus glaucescens*. I have seen none of his specimens (if he collected any) and cannot judge the accuracy of his identification.

***Larus canus brachyrhynchus* Richardson.** Short-billed Gull.

The short-billed gull breeds on Kodiak Island, but is less common there than the glaucous-winged gull. Fisher obtained two specimens in 1882; Bretherton shot one in 1892; Amory and Koren shot a female bird on July 7, 1914; Hrdlicka found a few bones of this bird in his 1934 excavations. Bischoff collected two eggs (no data) supposed to be of this species, and two birds on June 11 and 12, 1868; Fisher collected 5 eggs in July, 1883. One of Fisher's birds is now in the British Museum (Saunders collection). Two birds, taken in 1904, are now in the Museum of Vertebrate Zoology.

***Rissa tridactyla pollicaris* Ridgway.** Pacific Kittiwake.

Dall mentions an observational record of this gull at Kodiak Island. Wosnessensky obtained two specimens in 1842-1843; Bischoff collected a subadult bird, August 29, 1868; Fisher collected two others there in 1882 and Bean took a young one in the summer of 1880; Bretherton shot a female in August, 1892. The Henshaw and the Saunders collec-

tions in the British Museum contain Kodiak specimens as does also the Museum of Vertebrate Zoology. Bean (1889) writes that the kittiwake is abundant on the island. Osgood collected a female on October 9, 1900. Koren collected a male on Kodiak Island on June 24, 1911, for the late Colonel Thayer, but the specimen is no longer in that collection. I have examined the Bischoff, Fisher, Bean, and Bretherton specimens. The fullest account of this gull as a member of the Kodiak fauna is that given by Bretherton. He noted that the birds arrived in thousands in April and May, apparently in the wake of vast schools of small fish. They remain on the island all summer, beginning to nest in May and continuing to lay eggs until the end of July. After the young are raised, the birds all leave for the south.

Xema sabini (Sabine). Sabine's Gull.

I know of but one Kodiak record for Sabine's gull—a specimen collected there by Bischoff on July 25, 1868.

Sterna paradisaea Brünnich. Arctic Tern.

Walker found a breeding colony of arctic terns at Alitak Bay, at the southern end of Kodiak Island during June, 1920. Wosnessensky obtained two examples during the year 1842-1843; Minor collected one bird in 1868; Bischoff obtained 5 specimens in August and September, 1868. W. J. Fisher collected a pair in June, 1882, and 23 eggs in July, 1882, and 12 more in 1884 (no further data); Bretherton obtained 2 eggs on June 19, 1894, and 2 birds in 1892 and 1894; he noted the birds arrived in small bands in the middle of May and began to nest in June.

Sterna aleutica Baird. Aleutian Tern.

The Aleutian tern was first discovered on Kodiak Island, where it was found breeding. Since then, it has completely disappeared from the island; it is now many years since it has been found there. All the early literature references merely repeat the one record—the bird and a single egg found by Bischoff on June 12, 1868. However, in the collections of the United States National Museum there are 12 eggs, said to be of this tern, collected on Kodiak Island by Bischoff in 1868, and 4 taken by W. J. Fisher in July, 1882. No original data slips accompany these specimens, and as the eggs of this tern and those of the arctic tern, which breeds commonly on Kodiak Island are so very similar, I cannot say with certainty that these additional specimens are really Aleutian terns' eggs. As late as 1892-1895 Bretherton noted this species on Kodiak Island, “. . . not as plentiful as *paradisaea*, but associating with it.” I know of no Kodak records or observations since 1895.

Uria aalge californica (Bryant). California Murre.

Bischoff collected a series of fourteen specimens, January to September, 1868; Bretherton obtained a male in November, 1893; Hrdlicka

obtained many bones of either this or the following species, probably both, during his excavations in 1932 and 1934. The California murre appears to be a common bird on Kodiak Island, where it breeds.

***Uria lomvia arra* (Pallas).** Pallas's Murre.

Bischoff collected a specimen on Kodiak Island, September 1, 1868; Fisher also obtained one there in 1882 (no further data); Hrdlicka's 1932 and 1934 collections contained many murre bones, among which were probably some of this species. It is known to breed on the island; Fisher collected an egg of this species there in July, 1883; an egg collected on June 24, 1896, is now in the collection of Mr. Verdi Burtch of Branchport, New York. Bretherton considers this murre as less numerous on Kodiak Island than in other parts of its range.

***Cephus columba* Pallas.** Pigeon Guillemot.

The pigeon guillemot is an abundant summer bird on Kodiak Island and is definitely known to breed there. It arrives there around the end of March, nests from the middle of May to early July, and leaves for the south by the middle of October. Wosnessensky obtained a male on February 16, 1843, and a female (without data); Bischoff collected 32 skins and 3 eggs from January to August, 1868; Minor shot 1 in June, 1868; Fisher obtained 3 skins and 4 eggs, June 20-July, 1882, 4 eggs in July, 1883, and 2 more on June 19, 1884. Bretherton collected 2 eggs on June 26, 1893; and 5 birds, 1891-1893; Hrdlicka found bones of this species in old Eskimo middens in 1932 and 1934. Of the 35 skins mentioned above, 6 are still in the United States National Museum and have been examined by me in the present connection. Bretherton's 5 birds have been loaned by the Oregon Agricultural College. They illustrate all the plumages of the species. In the collections of the U. S. Biological Survey is a female collected on October 9, 1900 by W. H. Osgood. Other Kodiak material is in the Henshaw collection, in the British Museum (W. J. Fisher and Panshin coll.), and in the Museum of Vertebrate Zoology, (10 specimens taken in July and September, 1904). A young bird in post natal molt, collected by Bretherton, is dated August 4. It is practically full grown in size but still has the natal down attached to the juvenal pennaceous plumage.

***Brachyramphus marmoratus* (Gmelin).**

Marbled Murrelet.

The marbled murrelet is said to breed on Kodiak Island, but the only evidence for this statement appears to be that it has been found there in mid-summer. Wosnessensky shot two of these birds; Brandt collected this species on Kodiak Island; I have examined one of these specimens; Fisher obtained three birds in January, 1882; Bischoff collected one March 2, 1868; Bretherton obtained 5 specimens between the years 1892 and 1895; Townsend shot a bird on August 18, 1888. The Bischoff and 2 of the Bretherton specimens I have not seen; the others

I have. They are all in the United States National Museum except the 3 Bretherton birds which are in the Oregon Agricultural College Museum. The Townsend specimen is considerably smaller than the others. The Sennett collection in the American Museum of Natural History contains a Kodiak specimen, as does the Sanford collection in the same institution. In the Thayer collection there is a female shot on the island by Kleinschmidt on May 29, 1913.

Synthliboramphus antiquus (Gmelin).

Ancient Murrelet.

The ancient murrelet breeds on Kodiak Island. Wosnessensky obtained two specimens in the years 1842-1843. Fisher collected a male, June 26, 1882 (specimen examined), and a long series of eggs, June 1, 1884; Bretherton considered the species a common bird on the island.

Ptychoramphus aleuticus (Pallas). Cassin's Auklet.

Two specimens were obtained by Wosnessensky in 1842-1843. Brandt records a specimen from Kodiak Island, collected August 1. Bischoff obtained a bird on July 18, 1868, since lost. Fisher collected a large number of eggs on May 28, 1884.

Cyclorhynchus psittacula (Pallas). Paroquet Auklet.

The paroquet auklet breeds on Kodiak Island. Fisher collected seven eggs there on June 19, 1884. I can find no records of any Kodiak specimens (skins) other than two collected by Wosnessensky, than Brandt's birds and a single example collected by Fisher (no data). Bretherton did not see the species himself, but recorded it on the basis of Fisher's notes. Rogers saw one off the north shore of Kodiak Island, July 25, 1929.

Aethia cristatella (Pallas). Crested Auklet.

The crested auklet breeds on Kodiak Island. Wosnessensky obtained two birds during his visit in 1842 and 1843. Bischoff collected a specimen on May 11, 1868; Fisher obtained 9 individuals in June, 1882, and 6 in March and April, 1884, 6 of which have been available for identification. According to Bretherton, who collected a male in January, 1892, this auklet breeds on the island (especially at the south end of the island), but is more numerous there in winter than in summer. Bischoff's, Fisher's, and Bretherton's birds have been seen by me in the preparation of this paper.

Aethia pusilla (Pallas). Least Auklet.

According to Bent, this auklet is said to breed on Kodiak Island. Fisher obtained 3 males and 2 females on the island in January, 1882; of these, two males and 1 female have been examined in the present study. Bretherton never saw the species there himself, so it must be either very scarce or local or of only sporadic occurrence.

Cerorhinca monocerata (Pallas). Rhinoceros Auklet.

Wosnessensky collected two specimens in 1842 or 1843. Brandt observed the rhinoceros auklet on Kodiak Island. As far as I know, no one else has noted its presence there, although Pallas may have had a Kodiak record when he described the bird and gave as its range, "circa promontarium S. Eliae America et ad littora insulae Kadiak."

Fratercula corniculata (Naumann). Horned Puffin.

Wosnessensky obtained three examples in the years 1842-1843. Bischoff collected 27 specimens in January, June, July, and September, 1868; Fisher obtained 4 females in January, 1881, and 5 eggs on June 14, 1882, in addition to 2 in July, 1883. The Fisher birds have been destroyed. The Henshaw collection in the British Museum, contains 2 Kodiak specimens collected in July and August, 1879. Two of Bischoff's specimens have been seen in the present study. The Museum of Vertebrate Zoology contains 5 birds collected on Kodiak Island in 1904. The horned puffin is said to be an abundant resident on Kodiak Island.

Lunda cirrhata (Pallas). Tufted Puffin.

A common bird on Kodiak Island, where it breeds. Bischoff collected 5 specimens in March, June, July, and September 1868, two of which have been available to me for study. Fisher obtained an egg on June 14, 1882, and 6 others in July, 1883. Rogers saw 75 of these birds off the north shore of the island on July 25, 1929; 200 off the east coast a couple days later, and others still on the next day.

Bubo virginianus subsp. Horned Owl.

Known from Kodiak Island only on the basis of osseous remains. When reporting on these bones (1934), I assigned them to the race *algestus* on geographic grounds. However, the locality is equally close to the range of *lagophonus*.

Nyctea nyctea (Linnaeus). Snowy Owl.

I know of but a single record for Kodiak—a female collected in March, 1882, by Fisher, and long since destroyed.

Surnia ulula caparoch (Müller). American Hawk Owl.

Fisher collected 3 females in January, October, and November, 1884, and eggs in June, 1882, on Kodiak Island; Bretherton shot a female on January 30, 1893; otherwise the hawk owl is known on the strength of a specimen taken in 1904, now in the Museum of Vertebrate Zoology, and of a fragmentary skull unearthed in an old Eskimo midden on Kodiak Island in 1932 by Dr. Hrdlicka. Bretherton considered it as a resident species, probably breeding there. I have seen Bretherton's and Fisher's skins.

Asio flammeus flammeus (Pontoppidan). Short-eared Owl.

Fisher collected a single specimen on October 16, 1882, which has long since been destroyed. He also obtained a set of five eggs in July, 1882, brought to him by natives. Rogers saw one bird on the north-eastern corner of the island, July 27, 1929.

Cryptoglaux funerea richardsoni (Bonaparte).

Richardson's Owl.

This owl cannot be said (on present data) to be more than an uncommon resident on Kodiak Island. The only evidence I have been able to find is a set of 3 eggs collected by Fisher in June, 1882, entered in the catalogue of the United States National Museum as "*Nyctala richardsoni*?", and a specimen in the Henshaw collection. The eggs were brought to Fisher by a native, and are no longer to be found. The identification must, therefore, be considered open to question. The Henshaw collection is now in the British Museum. In answer to my request, Dr. Percy R. Lowe has examined this specimen and finds the identification to be correct. He compared it with 11 specimens of *richardsoni* from the mainland and could see no difference except for the fact that the Kodiak bird has a slightly longer wing (183 mm.).

Megasceryle alcyon caurina (Grinnell).

Western Belted Kingfisher.

Several Kodiak records of this bird are known to me. Wosnessensky shot a single example during his visit to the island, 1842-1843; Bischoff collected a male specimen on August 26, 1868; Panshin obtained one in 1871; and Bretherton shot one on July 26, 1892. Unfortunately both of Bischoff's birds were given away in exchange many years ago and I have not been able to examine them. The subspecific identification here given is based solely upon an examination of Bretherton's specimen, kindly loaned me by the Museum of Oregon Agricultural College. Rogers saw several in July, 1929.

Dryobates pubescens nelsoni Oberholser.

Nelson's Downy Woodpecker.

Wosnessensky collected two examples in 1842 or 1843; Bischoff collected four specimens of this bird on Kodiak Island, August to November, 1868. Of these, three have been available for study, one male and two females; and in addition a male and a female collected by William J. Fisher. Evermann obtained a female specimen on April 14, 1892. In his discussion of this race at the time he was describing it, Oberholser noted that three Kodiak specimens were smaller than most of his Alaskan mainland *nelsoni*; this I cannot corroborate; the variations are about the same in the Kodiak series and the mainland birds. This is also true of the amount of dark markings on the outer tail feathers; Kodiak birds do not have on the average more of these marks than mainland speci-

mens. Beck collected a female on July 29, 1919, and Harrold a male on Sitkalidak Island, May 15, 1927.

***Picoides tridactylus fasciatus* Baird.**

Alaska Three-toed Woodpecker.

The Alaska three-toed woodpecker breeds on Kodiak Island. Wosnessensky obtained one bird in either 1842 or 1843; Bischoff shot one on March 22, 1869 (specimen not seen by me); Fisher collected a specimen of this bird (no data), probably in 1882; Minor collected a female on June 28, 1868.

***Iridoprocne bicolor* (Vieillot).** Tree Swallow.

Mr. Charles H. Rogers informs me that he saw a family group of one or two adults and two or three young in the northeastern part of Kodiak Island on July 27, 1929. I know of no other records.

***Hirundo erythrogaster* Boddaert.** Barn Swallow.

One specimen on record, a bird collected by Bischoff on August 11, 1868. This specimen, examined by me in the present study, is a young bird with short outer rectrices. However, the barn swallow is (or was) very common on Kodiak Island. Burroughs (1910) noted barn swallows twittering by at St. Paul Village, and Keeler (1910) found them abundant about the village of Kodiak.

***Perisoreus canadensis fumifrons* Ridgway.** Alaska Jay.

Nelson states that this jay is, "... found throughout the Sitkan and Kadiak region . . .", but gives no definite records for Kodiak Island. I have not been able to find any and consider the species as not definitely established in the present list.

***Pica pica hudsonia* (Sabine).** American Magpie.

The magpie is common and breeds on Kodiak. Turner saw quite a number of these birds on the island; Nelson records them as abundant there. Wosnessensky procured two individuals in 1842-1843; Bischoff collected 16 specimens between February and October, 1868; Panshin obtained 1 in 1871; Bretherton shot a couple in February and May, 1892; Townsend got a specimen (no data) probably in 1894; Rutter collected 6 specimens from October to December, 1896 (Grinnell); 8 specimens, taken by an unknown collector in 1904, are in the Museum of Vertebrate Zoology; Copley Amory and Johan Koren shot a male on July 7, 1914; Beck obtained 2 in 1919, now in the Sanford collection. Three of Bischoff's specimens, 2 of Bretherton's, Townsend's bird, Beck's examples, and the one collected by Amory and Koren have been available to me for examination and study in the present connection. The last mentioned example, taken on July 7, is in extremely worn plumage; I doubt if I have ever seen any other bird in quite such abraded condition. Keeler (1910) found the magpie common at Kodiak in the

summer of 1899; Burroughs (1910) saw one at St. Paul village. Hrdlicka obtained a few bones from an old archaeological site.

***Corvus corax principalis* Ridgway.** Northern Raven.

The northern raven seems to be a very common bird on Kodiak Island, although the bulk of the evidence is based on bones unearthed in old Eskimo middens there by Hrdlicka in 1932 and 1934. Bischoff collected 3 birds in February and November, 1868; Bretherton observed several in 1891, 1893 and 1894; and Rutter collected 2 specimens on December 12 and 27, 1896 (sent to the collection of Leland Stanford, Junior University). The Thayer collection, now in the Museum of Comparative Zoology, also contains Kodiak material of this bird.

***Corvus brachyrhynchos caurinus* Baird.**
Northwestern Crow.

The northwestern crow is an abundant bird on Kodiak Island. Bischoff shot a specimen February 10, 1868; Dall took 1 bird and 2 eggs on June 6, 1874; Fisher shot 2 examples in March, 1882 and 2 others without data; Amory and Koran collected 3 birds on July 7, 1914, Hrdlicka found bones of this crow and his excavations of prehistoric Eskimo sites there in 1932 and 1934. The Thayer collection contains a Kodiak specimen of this crow, collected June 21, 1911. The Museum of Vertebrate Zoology possesses 3 taken in 1904 by an unknown collector; the Sanford collection contains 1 taken by Beck in 1919. Bendire quotes Bretherton to the effect that this crow occurs on Kodiak Island in immense numbers throughout the year, but that in the winter when they form large flocks, they are much more noticeable than in the summer. "In April they go into the interior of the island to nest, and but few are seen until August."

***Penthestes atricapillus turneri* (Ridgway).**
Yukon Chickadee.

The Yukon chickadee occurs in the wooded parts of Kodiak Island. Wosnessensky obtained two specimens in 1842-1843; Bischoff collected 11 specimens from July to November, 1868; Panshin obtained a single bird in 1871; Townsend shot 2, August 15-17, 1888; Bretherton shot a male, June 1, 1894; Ridgway, while on the Harriman Expedition, procured a young male on Kodiak Island on July 20, 1899. Of these 16 specimens 5 have been available to me for study in the present report. They are definitely *turneri*, not *septentrionalis*, as of several authors. Rutter (reported on by Grinnell) collected 8 specimens from October, 1896 to January, 1897. These specimens went to the Museum of Leland Stanford Junior University. The Thayer collection also contains Kodiak material of this bird; the Sanford collection has 16 birds taken by Beck in the summer of 1919. Keeler (1910) observed this chickadee on Kodiak Island in 1899. In the museum at Lübeck, Germany, there is a Kodiak example of this chickadee.

***Penthestes rufescens rufescens* (Townsend).**

Chestnut-backed Chickadee.

All that I have been able to learn of this chickadee on Kodiak Island is that Finsch states that Bischoff observed it there. Apparently he collected no specimens.

***Cinclus mexicanus unicolor* Bonaparte.** Dipper.

The dipper occurs regularly on Kodiak Island. Bischoff collected 3 specimens on November 3 and 4, 1868; Fisher obtained 1 in 1871; Rutter (reported on by Grinnell, 1901) shot 3 on October 19, November 10 and 21, 1896. One of Bischoff's specimens has been examined by me; the others and the bird collected by Fisher are no longer in the United States National Museum.

***Nannus hiemalis helleri* (Osgood).** Kodiak Wren.

Two specimens were taken by Wosnessensky in the years 1842-1843; Bischoff collected a specimen on Kodiak Island on August 14, 1868; Townsend shot 2 on August 15-17, 1888; Osgood procured 2 on October 3-4, 1900. All 5 birds (including the type) have been examined in the present connection. A small series of specimens, in the Thayer collection, was collected June 16-20, 1911; 21 specimens, taken by Beck in the summer of 1919, are in the Sanford collection (19 seen by me). Another specimen is in the Natural Museum at Lübeck, Germany. Keeler (1910) saw this species in fair numbers in the forested part of the island. Harrold shot a male on Sitkalidak Island on May 15, 1927.

***Ixoreus naevius naevius* (Gmelin).** Pacific Varied Thrush.

The Pacific varied thrush appears to be plentiful on Kodiak Island. Wosnessensky shot 2 birds during his visit in 1842-1843; Bischoff collected 7 specimens in May, June, and November, 1868; Fisher collected 3 birds in June, 1882, and Townsend shot 2 on August 15-17, 1888. I have seen 2 of Bischoff's examples and the 2 shot by Townsend and find them to be of the nominate race, as well as 15 collected by Beck in the summer of 1919 (Sanford collection). Professor Benick writes me that a Kodiak specimen is in the Lübeck Museum. Keeler (1910) noted this thrush and its pleasing song during his visit to the island with the Harriman Expedition.

***Hylocichla guttata guttata* (Pallas).** Alaska Hermit Thrush.

The Alaska hermit thrush breeds on Kodiak Island, where it seems to be quite common. Bischoff collected 2 specimens on May 17 and 27, 1868; Bean obtained a male, July 12, 1880; Townsend shot 4 specimens, August 15-17, 1888, and another on July 7, 1893; Bretherton collected a female on June 21, 1893; Greeley collected a male on July 17, 1897 (recorded by Grinnell); Osgood shot a male on October 4, 1900. A nest and 4 eggs were taken by Fisher in July, 1883. The Bean, Townsend, Bretherton and one of the Bischoff specimens have been

examined in the present study. Finsch records 2 birds taken in May. The Thayer collection contains specimens taken June 17-24, 1911; the Sanford collection includes 12 skins collected by Beck in the summer of 1919, 5 of which are juvenals. A bird in postjuvinal molt taken on August 23, dates that molt for Kodiak Island. Keeler (1910) observed this thrush on Kodiak Island. The Lübeck Museum has 2 Kodiak specimens.

***Hylocichla minima aliciae* (Baird).** Gray-cheeked Thrush.

As far as one may judge by actual specimens, the gray-cheeked thrush would seem to be less numerous than the preceding species on Kodiak Island. Minor collected a bird (without data) on June 28, 1868; Bischoff shot a female on June 27, 1868; Bean obtained a male on July 13, 1880. Beck shot 2 male birds on July 8 and 9, 1919 (Sanford collection). The last mentioned 3 specimens and the bird shot by Minor have been seen by me in this study and confirm the identification given in the above references. Keeler (1910) found, and heard the song of, this thrush on Kodiak Island.

***Regulus satrapa olivaceus* Baird.**
Western Golden-Crowned Kinglet.

Wosnessensky procured an example of this species in 1842 or 1843; Bischoff collected 11 specimens of this kinglet on Kodiak Island from July to the middle of November, 1868; Townsend obtained 2 on August 15-17, 1880, and another on June 7, 1893. Beck shot 7 birds in the summer of 1919. These are now in the Sanford collection. The Townsend specimens and 3 of those procured by Bischoff and the 7 Beck birds have been available for study in the writing of this report. Keeler (1910) saw a number of these kinglets in the forested part of Kodiak Island in the summer of 1899.

***Lanius borealis invictus* Grinnell.** Northwestern Shrike.

I know of but two Kodiak records for this species, a specimen without data, collected by Fisher in 1882, and which I have been unable to find (it is entered in the catalogue of the United States National Museum as "*Lanius borealis*"), and an immature female obtained by Rutter on February 28, 1896 (recorded by Grinnell, 1901).

***Vermivora celata lutescens* (Ridgway).**
Lutescent Warbler.

The lutescent warbler is said to breed on Kodiak Island, but the only evidence of its occurrence there I have been able to find are: a single male bird collected on June 7, 1893 by Townsend; another, now in the Thayer collection in the Museum of Comparative Zoology, taken June 21, 1911, by Koren; and a third, a male collected by Wosnessensky on July 4, 1842, now in the Zoological Museum of the Academy of Sciences of Leningrad.

***Dendroica aestiva rubiginosa* (Pallas).**
Alaska Yellow Warbler.

The Alaska yellow warbler occurs regularly on Kodiak Island and probably breeds there as several specimens have been taken, all in June, July, and August. Wosnessensky shot 3 in the summer of 1843; Bischoff obtained 3 in 1868; Panshin's collection contained 1, taken in 1871; Townsend collected a male in 1893. Koren collected a specimen on June 22, 1911, now in the Thayer collection. Only the last 3 specimens have been available for examination in the present study. Keeler (1910) found the yellow warbler not uncommon on Kodiak Island.

***Wilsonia pusilla pileolata* (Pallas).**
Northern Pileolated Warbler.

The northern pileolated warbler breeds on Kodiak Island and seems to be a common bird there. Wosnessensky obtained 4 birds in 1843; Bischoff collected 8 specimens, May 26-July 25, 1868; Fisher obtained a male, June 13, 1882, and a nest and 3 eggs in July, 1883; Townsend shot a specimen on August 11, 1888 and a pair on June 7, 1893. Ridgway collected a female, July 20, 1899. Beck shot 6 specimens in the summer of 1919; these are now in Dr. Sanford's collection. Of these 19 birds, 14 have been examined in the course of this study. Two other specimens, shot by Koren, June 16, 1911, and one collected by Kusche on May 29, 1913, are in the Thayer collection in the Museum of Comparative Zoology. Keeler (1910) records seeing this warbler on Kodiak Island.

***Euphagus carolinus* (Müller).** Rusty Blackbird.

One record, a bird shot on October 22, 1906, recorded by Reichenow (1909).

***Pinicola enucleator flammula* Homeyer.**
Kodiak Pine Grosbeak.

The Kodiak pine grosbeak must be a common bird on the island as Bischoff collected no fewer than 35 specimens May, 1868-March, 1869; Wosnessensky shot 3 in 1842-1843; Fisher obtained 4 in 1882; Panshin had 1 in his collection (no data); Townsend shot a female on April 14, 1892; Bretherton collected a male on September 3, 1892; and Rutter (recorded by Grinnell) collected another on January 22, 1896. There are a number of Kodiak specimens in the Thayer collection, in addition to 22 others, taken in the summer of 1919 by Beck, in the Sanford collection and 4 in the Biological Survey collection. Ten of Bischoff's specimens, including the type of *kodiaka*, Panshin's bird, Bretherton's example, 3 of Fisher's specimens, and the Thayer-Sanford birds have been available for study in the present connection. Ridgway obtained a male on July 20, 1899 (specimen examined). The species breeds on Kodiak Island.

Leucosticte griseonucha (Brandt). Aleutian Rosy Finch.

The Aleutian rosy finch appears to be (or at least, to have been) a common bird on Kodiak Island, judging by the number of specimens recorded. Wosnessensky collected 2 specimens in the winter of 1842-1843; Bischoff obtained 23 birds between November 18, 1868; and March 20, 1869; Fisher collected 4 more, probably in 1882; Rutter collected 4 winter birds and Greeley obtained a breeding specimen, July 19, 1897 (Grinnell, 1901). Panshin's 1871 collection contained a specimen without data. Osgood obtained 4 birds on Kodiak Island, October 9, 1900. Only 1 of Bischoff's skins, 1 of Fisher's birds, and Osgood's 4 have been seen by me. The Fisher specimen has the rectrices only partly grown, the feathers still enclosed basally in their sheaths. Unfortunately the specimen is without date.

Leucosticte tephrocotis littoralis Baird.
Hepburn's Rosy Finch.

The present species appears to be less frequent than the preceding one, although the data in both cases are relatively meagre. I have seen 2 specimens from Kodiak Island, a bird collected by Bischoff on February 4, 1869, and another shot by Fisher, probably in 1882. Nelson states that the two species of rosy finches occur together on Kodiak Island.

Acanthis linaria linaria (Linnaeus). Common Redpoll.

The redpoll is found on Kodiak Island throughout the year. I have records of 25 specimens collected by Wosnessensky, Bischoff, Fisher, Bretherton, Townsend, Koren, Beck, and Rutter; probably others have been taken as well. Of these, I have seen and identified 9 specimens; 2 of which, taken in July and August, are juvenal birds.

Spinus pinus pinus (Wilson). Pine Siskin.

Bretherton collected a pine siskin on Kodiak Island on June 4, 1894; Ridgway and Cole while on the Harriman Expedition, procured 2 males and 3 females there on July 3 and 20, 1899. I am not aware of any other records, but these are sufficient to show that the species is of regular occurrence on the island during the summer.

Loxia curvirostra sitkensis Grinnell. Sitka Crossbill.

Three specimens, collected by Bischoff on May 18 and June 13, 1868, are the only Kodiak records known to me. I have examined 2 of these and find them to be *sitkensis*.

Loxia leucoptera Gmelin. White-winged Crossbill.

Wosnessensky shot 5 white-winged crossbills in 1842 and 1843. Beck obtained 15 specimens of this species in the summer of 1919. It must, therefore, be rather common on Kodiak Island, when it does occur. The absence of records by other collectors, however, indicates that this crossbill may be sporadic and irregular in its occurrence there as it is in many

other localities. I have seen all 15 (in the Sanford collection) of Beck's birds in the present connection. Rogers saw one adult male on Spruce Island (between Kodiak and Afognak Islands) on July 28, 1929.

***Passerculus sandwichensis alaudinus* Bonaparte.**
Western Savannah Sparrow.

Kodiak Island seems to be about the meeting place of two races of the savannah sparrow—the present one breeds there and the Aleutian form, typical *sandwichensis*, occurs in late summer and winter. Bischoff collected 8 specimens between the middle of May and late August, 1868; Bean procured a male, July 13, 1880, Townsend obtained 2 specimens in August, 1888, and 1 more on June 7, 1893; Bretherton shot a female, July 1, 1893; Ridgway collected a breeding female and 2 nestlings on July 2, 1899. The Thayer collection contains several specimens taken in June, 1911, and the Sanford collection includes 6 taken by Beck in 1919. The Natural History Museum in Lübeck, Germany, possesses 4 Kodiak skins of this species. Harrold shot a single specimen on Sitkalidak Island, May 15, 1927.

***Passerculus sandwichensis sandwichensis* (Gmelin).**
Aleutian Savannah Sparrow.

The Aleutian savannah sparrow occurs as a non-breeding wanderer or migrant on Kodiak Island, sometimes quite early in the summer. Its own breeding season seems often to end early and post-nesting wandering begins soon afterward. Bischoff collected a full grown young bird in July, 1868; Bretherton obtained an adult female early in July, 1893.

***Junco oreganus oreganus* (Townsend).** Oregon Junco.

I have seen no specimens from Kodiak Island and know of none. Turner recorded this junco as numerous on the northwest shoulder of Kodiak Island. Nelson merely states it is "very likely to be found . . ." on the island.

***Zonotrichia coronata* (Pallas).** Golden-crowned Sparrow.

The golden-crowned sparrow is a very common breeding bird on Kodiak Island. In my notes and in the files of the Division of Birds, U. S. National Museum, I find records of 31 specimens received from Kodiak Island, collected during the months of May, June, July, August, and early September, by Wosnessensky, Bischoff, Bretherton, Townsend, Ridgway, and Panshin, 6 of which I have been able to study in the present connection. Turner did not collect any, but saw a number of the birds during his visit to the island in August, 1881; Bean noted it as common there. The Henshaw collection in the British Museum, the Thayer collection in the Museum of Comparative Zoology, and the Sanford collection in the American Museum of Natural History also contain Kodiak specimens of this sparrow. I have examined the Thayer and Sanford material. Juvenal specimens in the San-

ford collections bear dates of from July 23 to August 23. Swarth records a nest and 3 eggs, June 11, 1927.

***Passerella iliaca insularis* Ridgway.** Kodiak Fox Sparrow.

Very common on Kodiak Island. I have seen 19 specimens out of 32 collected by Wosnessensky, Bischoff, W. J. Fisher, Bean, Bretherton, Townsend, Panshin, and Ridgway. Eggs and nest collected by Fisher in July, 1882, have also been examined. In the collections of the U. S. Biological Survey I have seen an additional 17 skins collected by A. K. Fisher and R. H. Beck. Additional specimens known to me are in the Henshaw, Thayer, and Sanford collections.

***Melospiza melodia insignis* Baird.** Bischoff's Song Sparrow.

Bischoff's song sparrow is a common breeding bird on Kodiak Island. Every collector who has worked on the island appears to have taken one or more specimens. I have seen 52 skins collected by Bischoff, W. J. Fisher, Panshin, Bean, Townsend, Ridgway, A. K. Fisher, Osgood, Cole, and Beck. The Henshaw, Sanford and Thayer collections contain much Kodiak material of this bird, especially the Sanford collection from which I have seen 30 of the 52 birds examined. Richmond (1895) has covered what is known of this form in detail; I have nothing new to add to his account.

***Calcarius lapponicus alascensis* Ridgway.** Alaska Longspur.

Turner found this longspur abundant on Kodiak Island during his visit in August, 1881. He saw many young birds with the adults, indicating local breeding. Nelson writes that it does breed there and possibly winters there as well. I have seen only one Kodiak specimen, a bird taken on June 24, 1911, in the Thayer collection in the Museum of Comparative Zoology.

***Plectrophenax nivalis nivalis* (Linnaeus).**

Eastern Snow Bunting.

Wosnessensky obtained two examples on Kodiak Island. Bischoff collected 15 specimens in March and in November, 1868. One of these has been available for study and is a small-billed bird. It is therefore identified as typical *nivalis*. Bretherton collected a male on January 23, 1892, now in the Oregon Agricultural College collection. It, too, is typical *nivalis*. Whether or not all the specimens obtained by Bischoff were of this race is now impossible to say. Panshin's collection contained 3 birds taken in 1871, none of which has been seen by me. Rutter, as reported by Grinnell (1901) obtained a single specimen in the winter of 1896.

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